evaluates the inflammatory status of internal tissues, through measurement of their temperatures. The aim of this study was to evaluate whether carotid artery MWR measurements show similar predictive accuracy with carotid ultrasound in multivessel CAD detection.
Methods: Consecutive patients (n=392) scheduled for coronary angiography were included in the study. Carotid arteries of all patients were evaluated with ultrasound and MWR. Maximal IMT value of both carotid arteries was assigned as IMTmax. Respectively, ΔTmax by MWR was assigned as the maximal value of the temperature differences (ΔT) of both arteries. Multivessel CAD was defined as the presence of ≥50% stenosis in ≥2 major epicardial vessels. We further considered two risk prediction models: 1) traditional risk factors (TRF – sex, age, smoking, dyslipidemia, arterial hypertension, diabetes mellitus and family history) plus IMTmax, and 2) TRF plus ΔTmax and compared them with the use of c-statistic.
Results: Of 392 patients, 59 (15.10%) did not have significant CAD, while 136 (34.70%) had 1-vessel CAD, 130 (33.20%) had 2-vessel CAD and 67 patients (17.10%) had 3-vessel CAD. Patients with multivessel-CAD had higher ΔTmax compared with patients with 1-vessel or no CAD (1.00±0.59 vs 0.72±0.65°C, respectively, p< 0.001). ΔTmax was an independent predictor for the presence of multivessel CAD, when adjusted for TRF and IMTmax (p=0.02, OR: 1.56, 95% CI 1.08-2.23). The risk prediction models TRF+ΔTmax and TRF+IMTmax showed similar predictive capacity for the presence of multivessel CAD (c-statistic=0.706, 95% CI 0.655-0.757, p< 0.01 vs 0.707, 95% CI 0.656-0.759, p< 0.001, pdiffer. = 0.91).
Conclusions: The predictive value of ΔTmax was comparable to that of IMTmax. Thus, the noninvasive evaluation of functional carotid plaque characteristics could be useful in the prediction of the extent of coronary artery disease.

TCT-299

Association of Epicardial Adipose Tissue Inflammation as Assessed by FDG PET-CT with Angiographic Coronary Artery Disease

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Background: Inflammation in epicardial adipose tissue(EAT) has been proposed as a mediator of atherosclerosis in coronary arteries. We sought to evaluate the relationship of CAD with degree of EAT inflammation as assessed by FDG PET-CT.
Methods: We analyzed patients undergoing initial whole body FDG PETCT scan for non cardiac indications who also underwent coronary angiography within 1 year. Patients with prior chemotherapy or radiotherapy were excluded. Fusion PETCT images were used to locate EAT (in atrioventricular groove inside the parietal pericardium) & paracardiac adipose tissue (PAT) (in anterior mediastinum, outside the parietal pericardium). Maximum standard uptake values (SUVs) were calculated by drawing a small region of interest (ROI) within EAT & PAT. Adipose tissue was identified based on a maximum attenuation coefficient of < -10 Hounsfield units (HU) & mean of < -50HU in the ROI. Maximum SUV ratio of EAT to PAT was referred to as target to background ratio (TBR)& was used as index of inflammation after correcting for systematic factors responsible for inter-patient variability in FDG uptake. Presence of CAD was assessed based on angiographic stenosis of >50% in a major coronary artery.
Results: A total of 26 patients (9 females, 9 diabetics, 20 hypertensives, 21 hyperlipidemic, 13 smokers) were included in final analysis. The maximum FDG uptake was significantly higher {1.54+0.79 vs. 0.53+0.23 SUV, p< 0.001} in EAT compared to PAT supporting more inflammatory activity. Patients with angiographic CAD(n=19) had higher TBR for EAT to PAT(3.57±1.88 vs 2.29±0.73;p=0.09) compared to those without CAD(n=7) but the difference was insignificant due to small number of patients in this study.Among patients with CAD, those presenting with myocardial infarction(MI) during index angiography had significantly higher TBR compared to those without MI (5.29±2.25 vs 2.95±1.33; p=0.012). Diabetes,smoking or statin use did not significantly impact TBR.
Conclusions: Patients with CAD have higher EAT inflammation assessed using TBR determined by FDG PET-CT.Patients with MI have significantly higher EAT inflammation compared to those without MI.This study also reconfirms higher inflammatory activity in EAT compared to PAT.

TCT-300

Role of Dual Energy in contrast load reduction in the evaluation of coronary artery disease

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Background: Dual-energy (DE) CT allows higher intravascular attenuation levels at low energy levels in monochromatic evaluation. The objective of this paper was to evaluate the feasibility and diagnostic performance of DE coronary CT angiography (CCTA) with 50% iodine contrast volume reduction in comparison with standard complete dose contrast volume single energy (SE) CCTA in the evaluation of patients with suspected coronary artery disease.
Methods: The institutional review board approved the study protocol, and written informed consent was obtained from all patients. We studied 33 consecutive patients clinically referred to CCTA. Two scans were performed to each patient, first a DE CCTA with reduced contrast volume and then a complete dose contrast SE CCTA that was considered as the gold standard modality. Each scan was evaluated by one experienced radiologist who determined the presence of coronary artery disease in both CCTA scans using a 17 model classification. Stenosis was classified in 4 grades: 0: no stenosis; 1: 1-49% stenosis; 2: 50-69% stenosis; 3: stenosis >70%. The 95% confidence intervals for the proportions were calculated by the exact binomial method for the detection of coronary artery stenosis >50% per vessel and globally. Correlation between SE and DE CCTA was carried out by kappa coefficient.
Results: The mean age was 53.8 years old; 79% were male. Diagnostic accuracy of DE CCTA with 50% iodine contrast volume reduction is summarized in the Table. Correlation between both CCTA scans showed a kappa coefficient of 0.91 (0.83 to 0.99).
Conclusions: In this pilot study, DE CCTA with 50% iodine contrast volume reduction was feasible, showing a good diagnostic accuracy and interpretability compared with complete dose contrast volume SE CCTA.

	Sensitivity	Specificity	PPV	NPV
RCA	100%	94%	80%	100%
LMCA	100%	100%	100%	100%
LCX	100%	100%	100%	100%
LAD	91%	100%	100%	97%
GLOBAL	96%	97%	93%	98%

TCT-301

A Simple and Reliable Tool to Quantify Calcium Burden of Ascending Aorta.

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Background: Ascending aorta calcific plaques represent a potential source of emboli during open-heart procedures. The aim of our study was to validate a simple and new technique to quantify aorta calcium burden.
Methods: Ten thoracic CT scans (TCMD General Electric LightSpeed VCT 64 Slices) of octogenarian subjects were analysed independently by two radiologists and one vascular surgeon, using the Osirix Pro Software. A 3D reconstruction of the ascending thoracic aorta was obtained from the annular plane to the innominate trunk origin. The outer curvature maximal length was measured; this value was divided by ten Region Of Interest (ROI) points. At each ROI an exact perpendicular section of the aorta was obtained, whose calcium involvement was expressed as a percentage. The overall calcium burden was expressed as the mean of the ten measurements. Data of the 100 aortic calcium percentages were submitted to reliability measure tests using the statistical software SPSS 16.
Results: There was a substantial agreement between the three observer calcium estimations (0.22±0.2, 0.24±0.2, 0.23±0.2, respectively). Cronbach test estimate was 0.975. Intraclass correlation coefficient (ICC) was 0.927 (95% confidence limits = 0.904-0.946) with F test = 39.3 and p < 0.001.
Conclusions: Our technique represents a simple and effective way to provide quantitative assessment of ascending aorta calcium burden. There is an excellent intra-observer congruity with high reproducibility of measurements. This method may be particularly useful when screening optimal candidates for transcatheter aortic valve implantation.